

## ACCEPTABILITY ASSESSMENT OF BNFL LIMITED CONSTRUCTION AUTHORIZATION REQUEST

### 1. Programmatic and Safety Benefits Review

#### Acceptance Criteria:

1.3(1) - The submittal confirms that adequate safety will be achieved during Limited Construction Activities (LCA).

1.3(2) - The Contractor explains the benefits to be derived by the LCA.

1.3(3) - The Regulatory Unit (RU) confirms that the activities the Contractor proposes during limited construction relative to the site description are consistent with the most recent EIS and the relevant supplemental analyses.

1.3(4) - The activities and work to be performed during limited construction are compatible with the overall design.

#### Acceptance Criteria Met/Not Met:

1.3(1) - **Met.** The Contractor addressed this criterion in Section 1 (General Information) of the LCAR by stating: “The work during the LCA period will be performed in a manner that assures industrial safety (see Section 4.2) and radiological safety (see Section 4.1 and 6.1) to the workers, co-located workers and the public.” This statement meets the minimal requirement for the confirmation for adequacy. However, because the LCAR submittal provides no other specific summary evaluation and confirmation information, the RU will require the Contractor provide additional information to complete its detailed review.

1.3(2) - **Met.** The Contractor addressed this criterion in the cover letter that transmitted the LCAR by stating: “The benefit of authorizing this work in advance of Construction Authorization is to support start of vitrification in 2007.” By itself, this statement does not meet the minimal requirement for the confirmation for adequacy; however, the benefits to be derived from limited construction can be derived from the schedules (Attachment 1) to the LCAR submittal. These schedules of LCA activities show specific activities that are on project critical path through the LCA period.” Because the LCAR submittal does not provide a detailed analysis of the benefits

of a limited construction period, the RU will require the Contractor provide additional information to complete its detailed review.

1.3(3) - **Not Required.** This acceptance criterion is a DOE action.

1.3(4) - **Met.** The activities proposed by BNFL in the LCAR are consistent with the current design of the treatment facilities.

## **2. Facility Description**

### **Acceptance Criteria:**

2.3(1) - The facility location and the distance from the site boundary in all directions, including the distance to the nearest resident.

2.3(2) - The layout and location of buildings on the facility site, using scaled drawings to show the plant layout, including plant structural features such as buildings, towers, tanks, and transportation right-of-ways, and the relationship of specific facility layout features to the major processes that will be ongoing at the facility

2.3(3) - The footprints and elevation of the compacted subgrades for the buildings

2.3(4) - The excavation related to the fire protection system that may be installed during the LCA, including sufficient information to ensure that the installed underground portions of the system will meet seismic requirements, as well as the system performance requirements related to the excavation, if any. The submittal should include objective evidence that appropriate quality has been, or will be, applied to designing, constructing, installing, and testing the underground firewater system to meet the corresponding Safety Requirements Document (SRD) requirements.

2.3(5) - Objective evidence that the duct banks for important to safety SSCs conform to design drawings and meet applicable requirements, including seismic. The objective evidence should include the Contractor's appropriate level of inspection and verification.

2.3(6) - The detailed plans for inspecting and verifying that the concrete batch plant meets the ACI-318 certification activities.

2.3(7) - The laydown area for storing important to safety Structure Systems and Components (SSCs) meets the requirements of the Quality Assurance Program and Implementation Plan and the Integrated Safety Management Plan.

2.3(8) - Capability of the civil testing laboratory to repeatedly and reliably perform tests to verify that important to safety attributes, such as soil density/compaction ratio and moisture content, conform to the design requirements.

2.3(9) - The excavation-related design of important to safety buildings with sufficient information to ensure that the excavation will be adequate, including a description of backfill compaction criteria, pile location, and depth that is sufficient to ensure that the foundation-bearing capacity will be adequate.

2.3(10) - A listing of the industry codes and standards that will be implemented in executing the construction activities authorized by the LCA

2.3(11) - Information on electrical systems and components that will be installed as part of the LCA and that are designated as important to safety.

#### **Acceptance Criteria Met/Not Met:**

2.3(1) - **Met.** The Contractor addressed this criterion by providing Figures 1-1 and 1-2, which provide summary level information regarding distance to the site boundary and populations. Because specific data aren't provided but can be estimated from the two figures, the RU may require the Contractor provide additional information to complete its detailed review.

2.3(2) - **Met.** The Contractor addressed this criterion by providing drawings that included the layout and location of buildings, tanks, and transportation right-of-ways.

2.3(3) - **Met.** The Contractor addressed this criterion by providing drawings that included building footprints and excavation elevations. The Contractor identified soil compaction and excavation survey control as being important to safety (ITS). However, because the LCAR did not provide sufficient information on the structures to assess the excavation area and its depth, the RU will require additional information to complete its detailed review.

2.3(4) - **Met.** The Contractor addressed this criterion by providing drawings and text. Because the Contractor stated the fire main has not been designated as ITS the regulatory acceptance criterion is not applicable. The Contractor also stated that the firewater yard piping distribution system "is not expected to function after a design basis earthquake." The RU will require additional information to complete its detailed review because the drawings provided with the LCAR do not include sufficient information to allow evaluation of fire protection system seismic performance or system performance requirements related to excavation. Additional drawings were referenced in the LCAR that may include the

required detail; however, these drawings were not provided.

The Contractor did commit to design and install the fire main and hydrant system per Nation Fire Protection Agency (NFPA) 24, the fire pump system to NFPA 20, and the firewater storage tanks to NFPA 22. As required by these NFPA standards, the fire protection equipment will be protected against damage caused by explosion, fire, flood, earthquake (presumably one less than the DBE), rodents, insects, windstorm, freezing, and vandalism. These three NFPA standards are mandated by NFPA 801 (an implementing standard in the Safety Requirements Document [SRD]) for these applications. Thus, based upon the QAP content of the LCAR, coupled with the commitment to these NFPA standards, this portion of the criterion is reviewable and potentially acceptable.

2.3(5) - **Met.** The Contractor addressed this criterion by providing drawings and text. The Contractor identified the ducts as not being ITS, therefore the regulatory acceptance criterion is not applicable. The Contractor identified the duct locations on drawings. Because specific design details on the ducts were not provided beyond the specification of Channel A or Channel B, the RU will require additional information to complete its detailed review.

2.3(6) - **Not Met.** The Contractor addressed this criterion by providing text. The Contractor stated that the concrete batch plant would meet ACI-318 requirements. However, the Contractor did not provide detailed plans for inspecting and verifying that the concrete batch plant would meet ACI 318 requirements. The RU will require the aforementioned additional information to complete its detailed review.

2.3(7) - **Not Met.** The Contractor addressed this criterion by providing text. The Contractor stated that ITS equipment would not be installed during the limited construction period; however, the Contractor did not state that ITS materials would not be procured and stored in laydown areas at the site.

2.3(8) - **Not Met.** The Contractor addressed this criterion by providing text. The Contractor stated that a qualified material-testing subcontractor would be required to submit and follow an approved quality program; however, the Contractor did not provide specific details on civil testing laboratory capabilities.

2.3(9) - **Not Met.** The Contractor addressed this criterion by providing drawings. While the excavation design of ITS buildings was provided, the information required to determine if the excavation would be adequate was not. Backfill and compaction criteria were provided; however, sheet pile dimensions were not. The RU will require this additional information to complete its detailed review.

2.3(10) - **Met.** The Contractor addressed this criterion by providing text that described standards not currently art of the SRD and an Authorization Basis Amendment Request to revise the SRD.

2.3(11) - **Met.** The Contractor addressed this criterion by providing text, which stated that no ITS electrical components would be installed during limited construction

### 3. Management Control Systems

#### Acceptance Criteria:

3.1.3.3 - The LCAR must commit to an approved QAPIP for limited construction. The Contractor's QAPIP for limited construction is acceptable if it meets the criteria specified in the latest revision of the QAPIP review guidance document RL/REG-96-01, *Guidance for Review of TWRS Privatization Contractor Quality Assurance Program*,<sup>1</sup> and if it describes an acceptable QA program for the identified limited construction activities that can be implemented. If the RU has approved a revised QAPIP for limited construction, no additional review is required

3.2.3.3(1) - The Contractor establishes a methodology to classify limited construction incidents and to notify appropriate regulatory authorities of the incidents consistent with requirements. (See Safety Criteria 7.7-4, 7.7-5, and 7.7-6.)

3.2.3.3(2) - The Contractor investigates incidents that occur during the facility's limited construction to determine the root cause(s) and to recommend corrective actions. The investigation team includes some individuals who are independent from the line function(s) involved with the incident under investigation. (See Safety Criterion 7.7-2.)

3.2.3.3(3) - The Contractor monitors and documents corrective actions through completion. (See Safety Criterion 7.7-3.)

3.2.3.3(4) - The Contractor maintains documentation such that lessons learned may be applied to future activities. (See Safety Criteria 7.7-3 and 7.7-6.)

3.2.3.3(5) - The Contractor requires that before LCA, a procedure be developed that includes the following elements. (See Safety Criterion 7.7-7, the ISMP, Section 5.6.7; and the ISAR, Section 3.7.)<sup>2</sup>

- A documented plan for investigating an incident

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<sup>1</sup> *Guidance for Review of TWRS Privatization Contractor Quality Assurance Program*, RL/REG-96-01, Rev. 1, 1999.

<sup>2</sup> Procedures that address construction incidents are expected to be in place for the CAR.

- A description of the functions, qualifications, and responsibilities of the investigative team lead and any team members; the scope of the team's authority and responsibilities; and assurance of management cooperation
- Procedures for maintaining auditable records and documentation related to incident investigations
- A system to ensure completion of any corrective measures specified. Documented corrective actions are taken within a reasonable period to resolve findings from incident investigations.

#### **Acceptance Criteria Met/Not Met:**

3.1.3.3 - **Met.** The Contractor addressed this criterion by providing text and a Quality assurance Program and Implementation Plan (QAPIP) for Design and Construction. While the LCAR did not specifically commit to an approved QAPIP, the reviewers concluded that BNFL submitting and requesting approval of the QAPIP request met the intent of the acceptability criterion.

3.2.3.3(1) - **Not Met.** The Contractor addressed this criterion by providing text. Section 4.2.1, "Nonradiological Worker Safety and Health Plan" discussed incident investigation; however, the LCAR did not describe the process that the Contractor would use to conduct the investigations. In addition, the LCAR transmittal letter only partially described the threshold for incident reporting.

3.2.3.3(2) - **Not Met.** The Contractor did not discuss incident investigations and did not discuss makeup of the incident investigation team. However, the makeup of an incident investigation team is apparently addressed in the Nonradiological Worker Safety and Health Plan (see Section 4.2.1 of the LCAR submittal). The plan was not submitted with the LCAR.

3.2.3.3(3) - **Not Met.** The Contractor did not discuss monitoring and documentation of corrective actions resulting from incident investigations.

3.2.3.3(4) - **Not Met.** The Contractor did not discuss documentation of incident investigations. However, lessons learned are apparently included in the incident investigations portion of the Nonradiological Worker Safety and Health Plan.

3.2.3.3(5) - **Not Met.** The Contractor did not describe and incident investigation procedure or its contents.

## **4. Environmental Protection**

#### **Acceptance Criteria:**

4.3.3(1) - **Conformance with Dose Limits** – The Contractor makes a clear statement indicating that it will conform to the public dose standards in Safety Criteria 2.0-1 and 2.0-2 in the event that contamination or buried wastes are encountered. According to the Contractor’s environmental ALARA (as low as reasonably achievable) program [Safety Criterion 5.3-1(5)], the Contractor should establish appropriate action levels that trigger mitigative actions if contamination is encountered. These actions ensure that fugitive emissions do not result in doses exceeding the relevant standards and that the impacts of the emissions on the environment and the public are ALARA. The relevant implementing standard identified in the SRD (G-10 CFR 835/B2 Occupational ALARA Program) discusses the use of action or administrative control levels.

4.3.3(2) - **Contamination Control** – The Contractor describes the controls on contamination encountered during limited construction activities and the release of materials and property containing residual radioactive material (Safety Criteria 5.3-1[9] and [10] and Safety Criterion 5.3-8). The Contractor describes the methods used to limit and control the spread of radioactive contamination. These controls and methods must be consistent with the relevant implementing standards (including ANSI/ISO-14001-1996 and 10 CFR 835, Appendix D<sup>3</sup>) identified by the Contractor.

4.3.3(3) - **ERPP Documentation** – The Contractor describes an adequate program for limited construction activities that addresses the relevant components of the ERPP, as required by the Regulatory Process document<sup>4</sup> and Safety Criterion 5.3-1. The program description must be sufficient for the reviewers to conclude that the Contractor will manage and control the inadvertent release of radioactive material to the environment such that the impacts to the environment and exposures to the public are kept ALARA and within prescribed limits.

4.3.3(4) - **Environmental Samples and Surveys** – The Contractor describes the program to obtain appropriate environmental samples and radiological surveys to detect the presence of soil contamination such that the public is not adversely impacted by the limited construction activities. This includes determining appropriate background and baseline concentrations of radionuclides in environmental media near the construction site. Such information is necessary to facilitate recognition of above-background concentrations. The sampling and surveying activities will be performed according to approved procedures and must be performed in a manner consistent with the implementing standards (including ANSI/ISO-14001-1996) identified by the Contractor in conjunction with its commitment to prepare an ERPP as established in Safety Criterion 5.3-1.

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<sup>3</sup> 10 CFR 835, “Occupational Radiation Protection” (Final Rule November 6, 1998).

<sup>4</sup> *DOE Process for Radiological, Nuclear, and Process Safety Regulation of the RPP Waste Treatment Plant Contractor*, DOE/RL-96-0003, Rev. 1, Section 3.3.3, “Authorization for Construction,” item 11, dated July 1998.

4.3.3(5) - **Recording and Reporting of Results** – In Safety Criterion 5.3-1(3), the Contractor committed to providing information in its ERPP on the methods used to monitor, report, and record compliance with the ERPP. The Contractor's environmental recordkeeping and reporting approach for the limited construction must be consistent with these methods and the associated implementing standards, including ANSI/ISO-14001-1996.

#### **Acceptance Criteria Met:**

4.3.3(1) - **Met.** The Contractor stated in the LCAR that "due to the potential for encountering legacy radioactive material during construction activities, the WTP project will implement a radiological monitoring program to assure site personnel and public radiological safety. The radiological monitoring program is designed to detect radioactive material or conditions above existing background levels and to ensure prompt identification and response to conditions warranting protective measures in accordance with 10 CFR 835, Occupational Radiation Protection."

4.3.3(2) - **Not Met.** The Contractor did not directly discuss contamination control, but rather referred to the Radioactivity Control Program.

4.3.3(3) - **Not Met.** The Contractor stated that the ERPP did not apply until radioactive materials are introduced into the treatment facility. While this may be true, Table S4-1 of the Contract states that a draft ERPP shall be submitted at the start of construction. Since Section 4.1 of the LCAR states "Construction (limited construction and construction authorization activities are collectively referred to as 'construction' activities throughout the RPP.", a draft ERPP should have been submitted with the LCAR. Further, Section 4.3.2 of the LCAR review guidance (RL/REG-99-17) states "Because much of the ERPP is not applicable to limited construction activities, the Contractor's submittal must address only those topics that are relevant to limited construction."

4.3.3(4) - **Not Met.** The Contractor did not provide sufficient detail of its sampling program for reviewers to determine adequacy. The Contractor stated that the WTP construction site characterization study, "TWRS Phase 1 Privatization Site Pre-construction Characterization Report (HNF-2067, Rev. 0)" had indicated radiological conditions consistent with Hanford Site-wide background levels. However, due to the potential for encountering legacy radioactive material during construction activities, the WTP project will implement a radiological monitoring program to assure site personnel and public radiological safety. The radiological monitoring program is designed to detect radioactive material or conditions above existing background levels and to ensure prompt identification and response to conditions warranting protective measures in accordance with 10 CFR 835, Occupational Radiation Protection.

4.3.3(5) - **Not Met.** The Contractor did not provide information in its ERPP on the methods to monitor, report and record compliance with the ERPP, because the



Contractor considered that the ERPP did not apply until radioactive materials are introduced into the treatment facility.

## **5. Contractor's Technical Experience and Qualifications**

### **Acceptance Criteria:**

**5.3.3(1) - Technical Qualifications** – The Contractor's described technical qualifications reasonably ensure that personnel performing limited construction activities are capable of performing the work assigned based on the implemented Contractor training and qualification program and any special experience, training, or qualifications the Contractor has identified in the submittal. "Personnel shall be trained and qualified to ensure they are capable of performing their assigned work. Personnel shall be provided continuing training to ensure that job proficiency is maintained." (Safety Criterion 7.3-3)

**5.3.3(2) - Experience Qualifications** – The Contractor's described experience qualifications for performing limited construction work activities ensure that the activities can be performed effectively and safely. The Contractor has ultimate responsibility for the safety of its work activities (Safety Criterion 1.0-9), its facility and co-located workers, the public, and the environment. To do this, the Contractor must demonstrate that it has the experience and qualifications to perform limited construction activities safely. For example, the Contractor should describe its demonstrated experience in areas such as the following:

- Radiological safety (Safety Criterion 1.0-1)
- Radiation protection (Safety Criterion 5.0-1)
- Environmental radiation protection (Safety Criterion 5.3-1)
- QA (Safety Criterion 7.3-1)
- Management control systems (Safety Criterion 7.5-1).

### **Acceptance Criteria Met/Not Met:**

**5.3.3(1) - Met.** The information provided was sufficient to proceed with a detailed review. Because the Contractor's technical and experience qualifications will be a key discriminating elements in the upcoming construction contract solicitation, and the Contractor is likely to be a bidder for that solicitation, the RU will not provide comment on the LCAR submittal information that pertains to technical and experience qualifications.

**5.3.3(2) - Met.** The information provided was sufficient to proceed with a detailed review. Because the Contractor's technical and experience qualifications will be a key discriminating elements in the upcoming construction contract solicitation, and the Contractor is likely to be a bidder for that solicitation, the RU will not provide comment on the LCAR submittal information that pertains to technical and experience qualifications.

## **6. Radiation Protection Program**

### **Acceptance Criteria:**

6.3.3 - The Contractor's revised RPP for limited construction is acceptable if it meets the criteria specified in the latest revision of the RPP review guidance document (RL/REG 98-11) and if it describes an acceptable radiation safety program for the identified limited construction activities and can be implemented. The LCAR must commit to an approved RPP for limited construction.

### **Acceptance Criteria Met:**

6.3.3 - **Met.** The Contractor committed to follow the RPP for design and construction. In addition, the Contractor provided additional information relative to the potential for encountering legacy radioactive material during construction and the notification, categorization, and consequence assessment if legacy radioactive waste is discovered. Section 4.1.2. of the LCAR, "Notification, Categorization and Consequence Assessment," identifies that these activities will be implemented through the Radiological Control Program (RCP) and associated procedures. The LCAR provided no additional information about these activities. A review of the RCP (Section 16.1, paragraph 3) found that it did not address measures for categorization or consequence assessment upon discovery of unanticipated radiological conditions on the site. The RCP states, "Response to the discovery of unusual radiological conditions is also discussed in BNFL Inc. K90P003, RPP-WTP Construction Site Off Normal Radiological Event Response." This procedure is yet to be developed and the term "Response" is not defined in the RCP so it is not clear what activities "Response" includes (i.e., if this includes categorization and consequence assessment). The processes for categorization of an event and the associated consequence assessment will be required for the RU to complete its detailed review.

## **7. Approach to Implement Portions of the SRD and ISMP for Limited Construction Activities**

### **Acceptance Criteria:**

F.3.3(1) - The Contractor identifies in its submittal or in revisions to the SRD and ISMP which portions pertain to limited construction.

F.3.3(2) - The Contractor describes an approach to ensure that the relevant portions of the SRD and ISMP are implemented.

F.3.3(3) - The Contractor's approach is consistent with the program described in the ISMP for ensuring that the relevant SRD safety criteria are implemented.

**Acceptance Criteria Met:**

F.3.3(1) - **Met.** The Contractor identified those portions of the SRD and ISMP that apply to limited construction in Section 8 of the LCAR. However, the reviewers noted that Section 8 contained errors that require clarification. For example, the Contractor's statement in Table 8-3 that Safety Criterion 5.3-1 on submittal of a draft ERPP for start of construction was not applicable requires further discussion with the Contractor. (See response to Acceptance Criterion 4.3.3(3) above.)

F.3.3(2) - **Met.** The Contractor described an approach to ensure that the relevant portions of the SRD and ISMP are implemented during limited construction.

F.3.3(3) - **Met.** The Contractor's approach was consistent with the program described in the ISMP for ensuring that the relevant portions of the SRD safety criteria are implemented.

**8. SRD and ISMP Acceptability and Compliance**

**Acceptance Criteria:**

G.3.3(1) - The Contractor's important to safety limited construction activities will be conducted according to its approved ISMP.

G.3.3(2) - The Contractor's limited construction activities comply with the limited construction-related portions of the SRD.

**Acceptance Criteria Met:**

G.3.3(1) - **Met.** The Contractor committed to conduct important to safety limited construction activities according to its approved ISMP. The RU will confirm this criterion is met through inspection.

G.3.3(2) - **Met.** The Contractor committed to complying with the approved SRD during the conduct of important to safety limited construction activities.